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MEDICAL NEWS LETTER

Editor - Captain L. B. Marshall, MC, USN (RET)

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PREVENTIVE MEDICINE DIVISION

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Notice

Due to the critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve medical officers now on active duty who desire to submit requests for extension of their active duty for a period of three months or more will be given favorable consideration.

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Residency Training in the Navy

The results of previous notices concerning residency training have been most gratifying. However, applications are still desired from Regular officers and those Reserve officers who have completed their obligated service under the Universal Military Training and Service Act, as amended, in the following specialties: Internal Medicine, Radiology, Pathology, Pediatrics (opening in Pediatrics at Chelsea, Oakland, and Philadelphia), Urology, and Otolaryngology (Philadelphia only).

It is now the desire of the Bureau of Medicine and Surgery to continue a resident in training without interruption until he has completed the formal training requirements leading to certification by an American Specialty Board. This procedure will be strictly adhered to in every case where the needs of the Service permit and providing the officer shows satisfactory progress as a resident. (ProfDiv, BuMed)

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Diagnosis of Hemolytic Transfusion Reactions

In most instances, the clinical picture of hemolytic transfusion reactions is characteristic and permits a diagnosis without great difficulty. However, at least three reasons justify preoccupation with this subject: (1) There are cases in which the clinical manifestations are obscured by the underlying disease; (2) The characteristic clinical picture of a hemolytic transfusion reaction is not always fully developed; and (3) Some clinicians have a tendency to blame on transfusions all complications of diseases following a transfusion. Fortunately, laboratory tests may help to establish the correct diagnosis, providing they are employed properly and at the proper time.

The aid of the laboratory is essential in at least three situations for the correct diagnosis of hemolytic transfusion reactions: (1) Asymptomatic hemolytic transfusion reaction. Clinical symptoms, such as typical anginal precordial pain, severe lumbar distress, and chill followed by drop in blood pressure, are frequently the first indications of a hemolytic process. However, the absence of these signs and symptoms does not exclude a hemolytic transfusion reaction. Hemolytic reactions have occurred even in the absence of clinical manifestations, although there was definite proof that incompatible blood was administered; in one patient, the only clinical manifestation was urticaria which is usually believed to be characteristic of an allergic reaction; (2) Hemolytic transfusion reaction simulated by underlying disease; and (3) Hemolytic transfusion reaction obscured by the underlying disease.

The following conditions are also included: progressive renal failure which may be a part of the transfusion reaction, but which may also be a part of the underlying disease or a complication of a surgical operation; acute liver insufficiency with jaundice; acute anemia; hemoglobinuric nephrosis due to causes other than transfusion-hemolysis and resulting from shock or hemorrhage; progressive azotemia resulting from massive gastrointestinal hemorrhage; jaundice following massive pulmonary infarction, et cetera. The changes in the blood of patients with hemolytic transfusion reactions which are responsible for the various clinical manifestations described in the preceding sentence are: intravascular hemolysis followed by hemoglobinemia, hemoglobinuria, bilirubinemia, and bilirubinuria; rise in nonprotein nitrogen and its fractions, indicative of renal failure secondary to hemoglobinuric nephrosis. Intravascular hemolysis demonstrable by these tests in transfusion reactions is, in most instances, the result of destruction of injected red cells by the isoantibody of the recipient, or sometimes the result of destruction of the red cells of the recipient by the antibody of the injected blood. The authors' discussion deals mainly with recognition of hemolytic transfusion reactions of this nature. Intravascular hemolysis may also occur when the transfused blood contains

a large amount of free hemoglobin, or excessively fragile cells (inadequately preserved or over-aged blood). Renal or hepatic failure, or both, may be caused by various factors. These are some of the reasons why a transfusion may be blamed for events it did not cause and, vice versa, why a diagnosis of a hemolytic transfusion reaction may be missed.

What steps are to be taken in order to make possible a complete investigation of transfusion reactions if and when they occur? The following measures appeared to be indispensable: (1) Every pre-transfusion specimen must be saved for a period of at least 10 days, together with the pilot tube of the blood that was crossmatched for the recipient; (2) After administration of blood, the bottle should be returned to the blood bank; (3) When a transfusion reaction is reported or suspected, a specimen of blood of the recipient must be obtained immediately, one part of which is placed into a tube containing an anticoagulant, while the rest is used as clotted blood for tests; (4) A specimen of urine must be obtained immediately; (5) Additional specimens of urine should be collected and measured as indicated.

Laboratory tests are listed to be utilized for recognition of hemolytic transfusion reactions. The following tests are carried out immediately: (1) Donor and recipient are retyped (ABO group, Rh type); (2) Crossmatching tests are repeated with pre-transfusion and post-transfusion specimens, using in both instances a sensitive high-protein crossmatch as well as the indirect antiglobulin test. If all tests are negative but there is good reason to suspect a hemolytic transfusion reaction, a crossmatching test with enzyme-treated red cells of the donor is done. (3) The supernatant plasma of the post-transfusion specimen is examined with the naked eye, and chemically, for the presence of free hemoglobin. (4) A drop of the non-clotted blood is examined under the microscope for presence of small agglutinates resulting from intravascular agglutination. (5) Serum bilirubin and urea nitrogen are determined on pre-transfusion and post-transfusion specimens, and these tests are repeated at 24-hour intervals if a hemolytic transfusion reaction has occurred. (6) Urine specimens are tested for free hemoglobin, red cells, and red-cell casts. (7) The few drops of blood always remaining in the bottle should be tested for ABO group and Rh type in order to be sure that no confusion has taken place between identity of the pilot tube and the actual blood contained in the bottle. Another portion of the remaining blood should be used for study of possible bacterial contamination. A table lists tests that furnish corroborative evidence and further insight into the mechanism of hemolytic transfusion reactions.

If all tests give negative results, one can exclude a hemolytic transfusion reaction. If positive results have been obtained, the identification of the antibody responsible must be approached by the usual methods. In some instances, when a hemolytic transfusion reaction is suspected, one must also investigate the possibility that this was due, not to incompatibility

of the blood factor, but to other causes of hemolysis such as inadequate preservation of blood (improper temperature of storage) or simultaneous administration with the blood of incompatible solutions such as distilled water or glucose in water. It is, therefore, highly desirable that records of the administration of blood contain a definite statement as to the solutions that have been administered with it, or that have been passed through the same set of tubing either before or after administration of the blood.

Once a hemolytic transfusion reaction has occurred, follow-up tests are useful and important for management of the patient and evaluation of the effectiveness of therapy.

There is no single method that can insure freedom of hemolytic transfusion reactions or their early recognition once they have occurred. Meticulously done pre-transfusion tests, adequate controls, a well-organized system of record keeping, and a high index of suspicion regarding sequelae of blood transfusions, are indispensable. Eternal vigilance is the premium that must be paid to collect dividends in safe blood transfusions. (Davidsohn, I., and Stern, K., Diagnosis of Hemolytic Transfusion Reactions: Am. J. Clin. Path., 25: 381-392, April 1955)

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Epidemic of Infectious Hepatitis

Studies on the viral hepatitides of man have aroused increasing interest in the past few years, and several studies of epidemics of infectious hepatitis have been recorded. The present report is concerned with a brief review of the literature pertinent to the problem and with recording an epidemiological study with particular reference to delineation of high-risk groups in an open community outbreak. In addition, some observations on the effect of normal human serum gamma globulin in protecting exposed susceptibles under field conditions is presented and the proper application of this material in open community outbreaks considered.

From June 1951 to September 1952, an epidemic of infectious hepatitis occurred in Dalton and Whitfield Counties, Georgia, totalling 335 reported cases. The epidemiologic study which was done is summarized.

Practicing physicians in the epidemic area were contacted and apprised of the purposes of the study. They were requested to report all cases of infectious hepatitis to the Health Department by card or telephone. All cases were then visited by a physician-epidemiologist or a nurse-epidemiologist, and detailed data concerning the illness were collected on a prepared form. Included were: onset date; symptoms and signs; history of injections within 6 months; antecedent, coincident, or subsequent cases in the family or environment; animal and insect contacts; food, water, milk, and ice-cream supplies; and school or occupation. Data were analyzed from these forms.

Data on an outbreak of infectious hepatitis, which spread through a community by person-to-person contact over a period of 15 months involving ing 335 persons in 260 families, is presented. Striking selection of the younger age groups was noted, and examination of appropriate attack rates indicated that the school and family groups were the chief loci of dissemination of the virus.

Gamma globulin was shown to afford a high degree of protection of exposed susceptibles under field conditions when administered in doses approximating 0.01cc. per pound of body weight more than seven days before the appearance of symptoms.

In future epidemics, it would seem that efforts at control should proceed from these facts, and that gamma globulin should be administered to persons in high-risk groups, namely, to school and family contacts of cases. It is likely that a significant degree of control could be achieved even if administration of the material were restricted to persons in these groups under the age of 20. Prior studies have indicated that special attention should also be given to the protection of pregnant and postmenopausal women.

Further studies, in any event, should attempt to develop practical methods for control of epidemics of infectious hepatitis, and the availability of a substance which is effective in protecting exposed susceptibles under field conditions; The magnitude of the problem raised by the frequency and prolonged courses of such epidemics, together with the frequently widespread and prolonged morbidity resulting from the disease, underline the importance of such studies as pointed out in this article. (Barondess, J.A., et al., Epidemic of Infectious Hepatitis: Arch. Int. Med., 95: 633-643, May 1955)

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Musculoskeletal Chest Pain

Of 60 referred patients with myocardial infarction, either acute or old, 8 had persistent chest pain. One patient with chest pain had pain in the shoulder and hand, in addition; 2 other patients in this series had developed the shoulder-hand syndrome without chest pain.

The onset of the chest pain occurred within the first two weeks following myocardial infarction in 6 of the 8 patients, 3 months later in one, and 6 months later in another. The pain was located in the left precordium in 6 patients, and spread to the entire anterior chest wall in 2 patients. The postinfarction pain was located in the same area as the pain of the acute infarction in one-half of the patients. The onset of the pain was gradual, and its duration varied from 30 minutes to several days,

usually about 1 to 2 hours. It was most often described by the patient as a steady, dull, aching, or pressing pain. The intensity of the pain was usually mild to moderate. However, in 2 patients in whom the pain came on within the first week after infarction, it was so severe that opiates were required for relief. The episodes of pain recurred intermittently during a period of time varying from one month to 3 years.

There was no specific relationship to generalized physical exertion except that the pain was likely to occur toward the end of the day when the patient felt fatigued. In 5 of the 8 patients, the pain was worse when lying down, especially if lying on the left shoulder. Seven of the patients could relate either the onset or the aggravation of the pain to a specific movement of the body or arm; 4 to the raising of the arms above the head; and 3 to a turning or twisting motion of the body. Although none described a pleuritic pain, in 3 patients the pain was made slightly worse by taking a deep breath. Nitroglycerin had no effect on the pain in any of the patients, and in none of them did physical exertion reproduce the pain.

Six of the 8 patients were found to have localized areas of muscle tenderness within the area of the pains. However, the exact spontaneous pain was not reproduced by pressure. Reproduction of the spontaneous pain was accomplished in all but one patient, either by raising the arms high over the head or by twisting the body.

Three of the 8 patients had angina pectoris occurring after myocardial infarction. Two of them were unable to differentiate the attacks of angina from the skeletal chest pain until after the exercise test separated the short-lived anginal pain from the prolonged skeletal pain. Another noted that his skeletal pain became much more severe during periods of increasingly frequent attacks of nocturnal angina.

Rinzler and Travell have shown that local procaine infiltration, or topical ethyl chloride spray, may dramatically benefit this type of local pain; these measures were not deemed necessary in the patients in this series. Reassurance that the pain was not serious, local heat, and analgesics allayed the anxiety concerning the pain and reduced its intensity, although most of the patients continued to have milder discomfort at less frequent intervals.

The persistence of chest pain for months after the disappearance of evidence of tissue destruction following myocardial infarction distinguishes this pain from that of acute infarction. However, when the pain comes on within the first week after an infarction, the differential diagnosis between skeletal pain and a second infarction or coronary insufficiency is difficult. The lack of specific relationship of the pain to exertion, the absence of electrocardiographic changes during the pain, the absence of response to nitroglycerin, and its reproduction by arm or body motion, clearly differentiate it from angina pectoris.

Skeletal chest pain following myocardial infarction is almost uniformly interpreted by patients as serious cardiac pain, and because of the difficulties of differential diagnosis, physicians are apt to be misled in like fashion. Therefore, the importance of this pain is its differentiation from myocardial infarction and angina pectoris. This can be accomplished by applying those measures in history-taking and observation which elucidate skeletal pain. (Edwards, W. L. J., Musculoskeletal Chest Pain Following Myocardial Infarction: Am. Heart J., 49: 713-717, May 1955)

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Treatment of Cardiac Arrest and Slow Ventricular Rates in Complete A-V Heart Block

Few dependable drugs are available for increasing the ventricular rate in complete A-V heart block during prolonged sinus pauses; and following periods of cardiac arrest occurring in association with anesthesia and other states. Epinephrine (and occasionally other sympathomimetic drugs) and Isuprel are used to increase the idioventricular rate, but are not always dependable and may, at times, manifest serious untoward effects. In states where the slow heart rates are associated with increased vagal tone, a wider spectrum of drugs is available: e.i., parasympatholytic drugs (atropine, Banthine) and sympathomimetic drugs (ephedrine, Paredrine, and others). The cardiac slowing that occurs under many conditions may, however, be the result of a combination of several factors, namely depression of the conducting tissue in the cardiac muscle, varying degrees of increased vagal tone, or a combination of both factors. In such cases, the drugs mentioned above will either be ineffectual or only partially effective.

The object of this presentation is to report the effects of sodium lactate (molar and half molar) solutions: (1) in restoring ventricular beating during repeated episodes of cardiac standstill of Stokes-Adams seizures; (2) during episodes of cardiac arrest of other etiologies; (3) in increasing the ventricular rates in states accompanied by slow heart rates; e. g., varying grades of partial A-V heart block and sinus bradycardia; and (4) in increasing the rate of ventricular beating in complete A-V heart block. These effects have, insofar as the authors know, not been previously reported.

The therapy of episodes of cardiac arrest, ventricular standstill during Stokes-Adams seizures, the slow idioventricular rhythm of complete A-V heart block, the slow ventricular rates of partial A-V heart block and sinus bradycardia by the administration of molar and half molar sodium lactate is reported.

After epinephrine, Neosynephrine and atropine were without effect in restoring the ventricular beating during repeated, prolonged periods of ventricular standstill in a case of Stokes-Adams syndrome. Molar and

half-molar sodium lactate, administered intravenously, restored the heart beat on 10 separate occasions. After 2 hours, the heart continued to beat spontaneously for several hours. In the case of terminal cardiac arrest, the intracardiac injection of sodium lactate temporarily restored ventricular beating.

Sodium lactate was administered to three cases of complete A-V heart block. In one of these, the patient presented a ventricular rate of 15 per minute, widened QRS complexes, and a state of shock. Sodium lactate increased the ventricular rate to 60 per minute and increased the blood pressure to 120 to 140 systolic with resultant marked improvement in the patient's clinical state. The widened QRS complexes were significantly narrowed. Decrease in the rate of administration or cessation of administration of the lactate solution on two separate occasions resulted in a return of the electrocardiogram to the control rate of 15 per minute. After 5 hours of administration, the ventricular rate had increased to 60 per minute and was maintained without further lactate administration. About one hour later, normal sinus rhythm was restored.

In a second case of complete A-V heart block, the ventricular and atrial rates were significantly increased following the administration of sodium lactate. In a third case of complete A-V block, with occasional normally conducted beats, the complete A-V heart block was abolished and the idioventricular beats were entirely replaced by normally conducted beats.

Sodium lactate appears to have marked qualities of increasing cardiac rhythmicity while possessing little or no pressor action. Observations in the human subject and in the experimental animal suggest that this solution possesses qualities that should be of help in the prevention and therapy of sudden cardiac standstill. In addition, it did not produce dangerous ectopic rhythms.

The dose, method of administration, and fate of the sodium lactate in the body is discussed; the possible mechanisms by which the sodium lactate produces the effects described are outlined. (Bellet, S., Wasserman, F., and Brody, J.I., Treatment of Cardiac Arrest and Slow Ventricular Rates in Complete A-V Heart Block: Circulation, 11: 685-699, May 1955)

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Oral Penicillin Prophylaxis of Streptococcal Infections

Because of the lack of other effective control measures and its reported success in the prevention of recurrent rheumatic fever in civilian groups, investigations into the use of oral penicillin for the prophylaxis of epidemic streptococcal infections among naval personnel were begun in 1951. The initial study demonstrated that a 100,000-unit tablet of oral penicillin once daily was highly effective in preventing men from developing streptococcal

infections under conditions of considerable risk. The purpose of this report is to summarize additional investigations made in Navy recruit populations and to report some previously unreported data. With one exception, all studies in the Navy have been carried out by the Naval Medical Research Unit No. 4.

Commercial buffered tablets of penicillin G have been employed in studies having two general objectives: (1) to learn the smallest dose that would effectively suppress epidemics; and (2) to learn the smallest dose practicable for use in prophylaxis that would eliminate group A streptococci from a maximum number of carriers. It was foreseen that under some circumstances continuous prophylaxis over a considerable period of time might be necessary. For economic reasons, because the involved populations might number in the hundreds of thousands during full mobilization, the minimum effective dose was sought. It was also thought that, under some conditions, it might be possible to cause a more or less prolonged interruption of an epidemic by a short course of penicillin which would eliminate streptococci from most carriers.

Both controlled studies and experiments with mass prophylaxis have been made. In most studies, groups of recruits were cultured before and after a variable period of administration of the several doses of penicillin. The purpose was to learn how effective penicillin had been in preventing the development of a positive throat culture or in converting a positive throat culture to a consistently negative culture. In controlled studies, serial cultures were taken at weekly or more frequent intervals and the results are in terms of persistently positive or negative cultures. In mass prophylaxis experiments, only the results of single cultures taken before, during, and after prophylaxis were considered.

It appeared that all doses employed had some efficacy in converting the throat culture from positive to negative. It was not until a dose of 375,000 units daily was reached, however, that a marked decline in the incidence of carriers resulted. A dose of 500,000 units daily for 10-21 days eliminated streptococci from the throat culture in 97.2% of 138 men with positive cultures for group A streptococci prior to prophylaxis.

Experiments in mass prophylaxis with oral penicillin in military populations have been made by three other groups of investigators. Gezon, et al., compared once daily doses of 125,000 units of penicillin with 0.5 gm. of sulfadiazine. Both were effective in reducing the incidence of streptococcal infection. Wannamaker, et al., also reported on the efficacy of various doses and preparations of penicillin in eliminating streptococci from carriers. Pertinent to the present report was the observation that a dose of 250,000 units once daily for 10 days was not highly effective. Doses of 500,000 units or 1,000,000 units twice daily did not appear to be more effective than was the 250,000 units twice-a-day regimen in Navy recruits. Large doses given for only 5 days were relatively ineffective in comparison with the results of the same dose continued for 10 days.

The studies of Bernstein, et al., in Air Force recruits are most comparable to studies made in Navy recruits with a dose of 250,000 units twice daily. Both 5- and 10-day regimens were tried. Results showed the 10-day regimen to be the most effective; it closely paralleled the results obtained with 14- and 21-day regimens in Navy recruits. The type 3 streptococcus responsible for the epidemic in Air Force recruits persisted through a 10-day period of prophylaxis in all recruits, as did the type 19 streptococcus in Navy recruits during 1954. On the theory that recurrence of an epidemic might stem from incoming recruits, prophylaxis was continued in about half of newly arrived men. Results were inconclusive but the authors expressed an opinion that epidemic recurrence more probably stemmed from uneradicated sources on the post than from new recruits.

Once virulent strains have been introduced, rapid spread occurs from old recruits to new recruits. During epidemics, a high percentage of recruits completing training are carriers and may spread the epidemic into other populations to which they are assigned. In the Navy, a majority of the population in service schools (secondary training) is derived directly from the several recruit training centers. If epidemic streptococcal infections are occurring at any one of the recruit centers, a direct pathway of spread into the several service schools exists. Because these schools are located on posts where recruit training is also done, epidemics originating in recruits on one post may reach recruits at another post via the transfer of large numbers of men into the service schools.

Because epidemics can quickly be brought under control with a relatively short course of oral penicillin, and the effects can be expected to persist to some degree after prophylaxis is stopped, it would seem more practical that a diligent search be maintained for first evidences of the beginning of epidemics and that control be maintained by intermittent courses. This is particularly true because it appears that it may not be necessary to prevent all streptococcal infections to maintain a continued suppression of rheumatic fever. Under circumstances where epidemics rapidly recur, it may prove practical to maintain suppression by continuous administration of 50,000 units of oral penicillin once daily.

In general, however, continuous prophylaxis with small doses is undesirable unless administration can be strictly supervised by responsible individuals. In these studies, both supervisors and recipients were reluctant to adhere to the program after the epidemic was ended. There is also a greater risk of causing emergence of a penicillin-resistant strain of group A streptococcus--if such exists. Men known to have had previous attacks of rheumatic fever should probably receive continuous prophylaxis throughout their stay in training camps or schools. For this, a long-acting, parenteral penicillin preparation is probably preferable to oral penicillin.

When men known to have had previous sensitivity reactions to penicillin are exempted, the risk of mass prophylaxis with oral penicillin is

negligible. An occasional severe reaction will probably have to be anticipated but the risk appears to be minimal in comparison with the risk of individuals developing serious complications or sequelae if epidemics of streptococcal infections are allowed to go uncontrolled. There seems little possibility that penicillin-resistant strains of streptococci will emerge if mass penicillin prophylaxis is continued.

Epidemics of streptococcal infection in military populations can be prevented by continuous administration of oral penicillin in a dosage as small as 50,000 units per day. They can be abruptly terminated by a dosage of 250,000 units of oral penicillin twice daily. If continued for 10 days or more, this dose will eliminate the streptococcus from the throats of a majority of carriers.

Suppression or termination of epidemics of streptococcal infections with penicillin is attended by a reduction or termination of rheumatic fever and other complications. Intermittent 10-day courses of 500,000 units of oral penicillin daily, if spaced at short intervals, will probably almost completely prevent rheumatic fever even though limited recurrences of epidemic streptococcal infections occur between courses.

The results of these studies should be applicable to civilian populations and provide a means for the control of epidemic streptococcal infections in children's institutions and schools.

Penicillin prophylaxis is not considered a desirable or final answer to the problem of control of epidemic streptococcal infections. Rather, it is an interim measure, the judicious use of which will allow the emergency control of demonstrated epidemics of streptococcal infections and which is economically and administratively feasible.

A knowledge of the epidemiology of streptococcal infections in the population for which prophylaxis is considered is essential for its intelligent use. (Seal, J. R., CDR MC USN, Oral Penicillin Prophylaxis of Streptococcal Infections: Am. J. Pub. Health, 45: 662-672, May 1955)

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Reducing Salivary Lactobacillus Counts

Consistently high counts of salivary lactobacilli have been found to be closely related to concurrent dental caries activity. Consistently low counts of salivary lactobacilli have been found to be associated with little or no concurrent activity of dental caries.

Periodic counts of salivary lactobacilli have been used for some years by the Caries Control Laboratory of the University of Michigan School of Dentistry in the diagnosis of dental caries activity. Lactobacillus counts have also been used to determine the effectiveness of a dietary treatment (the elimination of sucrose and the reduction of other carbohydrates) in arresting dental caries activity.

In October 1944, the Ohio State University College of Dentistry established a Caries Control Laboratory patterned closely after the Michigan Laboratory. The technic of making salivary lactobacillus counts has been kept identical with that used at Michigan, therefore, the results of the two laboratories are comparable. The recommended low carbohydrate diets used in the Ohio Laboratory have been varied somewhat from those originally recommended at Michigan, but both laboratories have consistently recommended the elimination of sucrose from the diet and the reduction of other carbohydrates for periods of several weeks.

This report is a supplement to the 1948 report, and includes data from the Ohio Laboratory records from October 1944 to June 1953. Briefly, the procedure for diagnosis and treatment of active dental caries has been as follows:

Two stimulated saliva specimens are collected on consecutive days before the subject eats or brushes the teeth, and lactobacillus counts are made in the manner developed in the Michigan Laboratory. A patient who has a salivary lactobacillus count of over 10,000 per cubic centimeter of saliva is regarded as caries active. For this patient, it is recommended that carious areas be repaired immediately. The patient is then instructed to follow, for a period of two weeks, a diet free of sucrose and low in other carbohydrates (as near as possible to 100 gm. of carbohydrate a day). This diet is referred to as Plan I diet and is free of bread, potatoes, and high carbohydrate fruits and vegetables, as well as of sucrose. Careful adherence to this diet will nearly always result in a reduction of the salivary lactobacillus count to practically zero. At the end of a two-week period on Plan I diet, a count of salivary lactobacilli is made and the patient is instructed to change to Plan II diet. This is Plan I diet with the addition of some bread and some fruits and vegetables with a higher content of carbohydrate. At the end of two weeks of Plan II diet, another salivary lactobacillus count is made. If the count has remained low, the patient is instructed to change to Plan III diet. This consists of Plan I diet with the addition of bread, unrestricted fruits and vegetables, and the equivalent of one teaspoonful of sugar per day, if desired. After a two-week period of Plan III diet, the salivary lactobacillus count is determined, and if it is low the patient is allowed to change to Plan IV diet. This is a nearly unrestricted diet. However, the patient is instructed to keep sugar consumption low if he wishes to avoid a subsequent increase in the salivary lactobacillus count with its resultant resumption of dental caries activity.

The Laboratory intends to follow each patient with periodic lactobacillus counts for a period of at least two years after the initial dietary treatment has been completed. Any increase in the counts is followed by recommendations to the patient to restrict sugar consumption.

The Ohio State University Dental Caries Control Laboratory has, over a period of 8 years, made salivary lactobacillus counts on 1089 patients.

Of this number, 811 individuals had over 10,000 lactobacilli per cubic centimeter of saliva at the time of the initial counts. Two hundred and seventy-eight had salivary lactobacillus counts of less than 5000. Of the 278, 101 subsequently had increased counts. Of the caries-active individuals, 410 completed two weeks of the Plan I diet with low counts. Of these, 318 completed Plan II with low counts. Of the 318, 225 completed Plan III with low counts. One hundred and forty-two continued to have low counts after two weeks of Plan IV diet. Ninety-one of 126 individuals checked had low counts after 6 months on Plan IV. Fifty-three of 75 individuals checked had low counts after one year on Plan IV diet. Twenty-five of 34 individuals checked had low counts after two years on Plan IV diet. Fourteen of 23 individuals checked had low counts after three or more years on Plan IV diet. The results compare favorably with those published by Jay. (Kitchin, P. C., and Permar, D., Results of an Eight-Year Study of the Effectiveness of Carbohydrate Restriction in Reducing Salivary Lactobacillus Counts: J. Dent. Res., 34: 89-93, February 1955)

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Toothbrushing Procedure for Orthodontic Patients

Attempts have been made throughout history to clean the teeth, although the toothbrush as now known was developed in the last century. A review of the literature on toothbrushing reveals the following techniques which have possible implications for the orthodontic patient: Haphazard Method, Fones Method, Roll Method, Charters Method, Stillman Method, Physiologic Method, and Miscellaneous Methods.

The first thing that comes to mind when considering toothbrushing is that, if properly done, it will reduce the incidence of caries. Miller formed the chemicoparasitic theory of dental caries which is now generally accepted. According to this concept, caries is caused by an acid disintegration of the inorganic part of the tooth by acids which are formed from bacterial action on carbohydrates. The organic remainder of the tooth is then removed by proteolytic action of the same or different bacteria. This theory was strengthened by the work of Williams who demonstrated the presence of bacterial plaques which confine this action on specific areas of the teeth.

All of the caries control measures that are discussed should be used in order to keep the formation of new caries to a minimum.

Toothbrushing is equally important in maintaining a normal gingiva during orthodontic treatment. The orthodontic appliance interferes with the normal stimulation which the periodontium should receive by the excursion of food during mastication. Also, the accumulated debris, that lodges around orthodontic appliances not properly cleansed by brushing, acts as

an irritant to the supporting structures of the teeth. This irritant will produce an inflammation of the gingiva. Local periodontal disturbances are caused by inflammation.

The author does not recommend any particular type of dentifrice but follows the lead of the American Council of Dental Therapeutics of the American Dental Association which no longer evaluates dentifrices that do not claim caries-inhibitory factors. Those dentifrices containing chlorophyll, penicillin, urea, and ammonium compounds are placed by this council in a category requiring more investigation before their effectiveness can be accurately evaluated. More and more medicated dentifrices are appearing and although bacterial numbers can be reduced immediately after brushing, this inhibition is transient and the numbers of bacteria soon increase after brushing. The medicated dentifrices give the patient a sense of security so that he tends to be careless in other caries control measures. A dentrifice has three primary functions: (1) to increase the effectiveness of the brushing by containing an abrasive substance that will help to dislodge food particles and to polish the tooth surface; (2) to make the brushing procedure more enjoyable (for this reason a pleasant flavor is important); and (3) to reduce the surface tension of the saliva so that particles of debris may be removed more readily. Consequently, as long as the patient uses a dentifrice that is not harmful, the author does not recommend a change. He tells his patients that an intelligent application of "elbow grease" on the handle of the toothbrush is more important than the particular brand of toothpaste or powder that is used.

The basic technique used calls for the use of the small soft-bristled brush. With this type of brush, the teeth can be adequately cleansed and the damage that can be inflicted is minimized. One of these brushes is furnished to each patient and one kept in the office for the patient's use. A toothpaste is also furnished as paste is easier to apply to the brush and is not as likely to become spilled in the office as toothpowder. The patient receives his first instruction in toothbrushing technique as soon as the excess cement is removed from the first bands that are placed.

The technique used is basically the Roll technique. Toothpaste is applied to a new toothbrush and the technique is demonstrated in the mouth with the patient looking in a mirror. For demonstration purposes, the buccal surface of the upper left premolar region is selected as the stroke here is typical and easy for a right-handed patient to see.

The brush is placed with the tip of the bristles at the mucogingival junction and with the sides of the brush in contact with the soft tissue. The brush then is brought down over the buccal surfaces of the teeth with a rotary motion in which the ends of the bristles move the farthest and the base of the bristle in the handle moves the least. As the brush sweeps over the free gingiva, it is vibrated mesiodistally so that the bristles go into the buccal

embrasures and clean that area. Then the stroke is continued over the bands and tooth surface. This type of brushing removes particularly the debris in that area between the free margin of the gingiva and the orthodontic appliance. This is the area of the tooth surface most amenable to toothbrushing as a preventive measure for periodontal disturbances and caries.

The patient practices this technique until he becomes proficient at it in this area. Then a definite sequence of areas to brush is given to the patient. Because the lingual surfaces of the teeth usually are poorly brushed, the author recommends that they be brushed first. The teeth are brushed by starting with the most posterior tooth on the upper left side. The position of brush and the stroke are the same as described for the buccal surface of the teeth. When the lingual surface of the posterior teeth has been cleansed, the patient moves the brush to the lingual surface of the anterior teeth. Here is is necessary to hold the long axis of the brush parallel to the long axis of the teeth. However, a similar type of motion is used with a downward and forward roll. When this has been done, the brushing is continued on around the arch to the lingual surface of the last molar on the right side. Then the upper buccal surface is done as previously described, starting with the most posterior tooth on the left side and going around the arch to the right. Then the patient starts with the lingual of the lower left area, and goes around the arch to the lingual on the right side. Next he starts on the buccal surface of the lower left side, and moves around to the right. Finally, he brushes the occlusal surface with a back and forth stroke.

Oral hygiene has not been adequately described in the orthodontic literature. The importance of toothbrushing has been repeatedly emphasized, but how the teeth should be brushed, when the teeth should be brushed, and why the teeth should be brushed, have been neglected. A number of techniques of brushing the teeth are advocated for the patient without orthodontic appliances in place. This article presents a specific toothbrushing technique for orthodontic patients.

Just how much effect toothbrushing has on the incidence of caries is questionable. However, the cavities that occur on the cervical portions of the teeth can be prevented by proper cleansing. The teeth should be brushed soon after eating in order to obtain the maximum benefits of toothbrushing. There are other methods of caries prevention that must not be ignored. They include restriction of sugar in the diet, use of fluorides, proper band construction, proper band cementation, et cetera. Toothbrushing is equally important in preventing immediate and future periodontal disturbances, and halitosis. Tooth brushing has certain psychologic and esthetic values as well.

The patient must be properly motivated or he may be one of the many who will not make the required effort to maintain a clean mouth. Consequently,

certain psychologic principles must be followed in instructing the patient about oral hygiene measures. (Woods, G. A. Jr., Toothbrushing Procedure for Orthodontic Patients: Am. J. Orthodontics, 41: 370-383, May 1955)

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Clinical Experience with Intravenous Infusion of Emulsified Fat

The utilization of intravenous fat, the methods by which it leaves the blood, and its effect upon hepatic function have been studied. The present report concerns the results of 1466 infusions of fat emulsions in 426 patients and represents the larger part of the authors' clinical experience with fat emulsions during the period from September 1950 to July 1954.

The incidence of thermogenic responses to the infusion of emulsified fat has been one of the major difficulties that has confronted workers in this field. At the present time there is still uncertainty about the origin of these pyrogens and their mode of operation. When these clinical studies were begun it was believed that pyrogenicity resulted in large part from contamination of raw materials. Consequently, many different sources of a given oil, as well as different oils, were used and considerable effort was made to eliminate possible sources of contamination and to remove traces of contaminants by chemical and physical purification. This effort has been continued, using both natural and synthetic oils.

The authors found it necessary to evaluate numerous natural and synthetic emulsifying agents and triglycerides in the laboratory; those which appeared promising were eventually tested in the clinic. For these reasons, a large number of different batches of emulsions have been prepared, tested in animals, and finally, applied clinically. During the period covered by this report, more than 1000 different experimental and clinical emulsions have been prepared, and of these, 151 have been used in patients.

The data presented summarize the clinical observations made by the authors. Preclinical testing of the emulsions included infusion intravenously into three species of animals--rats, dogs, and rabbits--plus microscopic examination of the emulsion using the phase microscope. Emulsions were also tested for sterility. The details of these studies are given in a separate report. Emulsions which passed all preclinical tests were then used in patients. In using the emulsions in man, if any particular batch gave rise to a series of reactions, it was discarded. Similarly, if any individual patient reacted severely to administration of fat infusions, he was usually given no further infusions.

A temperature rise of more than two degrees, a chill, or any obvious reaction has always been considered adequate reason for stopping an infusion. On the other hand, if a given patient tolerated the infusions well, he may have been infused daily for several weeks. For these reasons, the

data are weighted favorably. Using these methods, the authors found that approximately 100 infusions in at least 25 patients are required to gain an adequate evaluation of the clinical usefulness of any particular type of emulsion. Clinical testing of this sort has been, and still is, necessary to determine the final behavior of any particular emulsion or batch of emulsion because, to date, it is impossible to predict the clinical result on the basis of laboratory and animal experimentation.

Almost all of the 426 patients in these studies were ill and in need of caloric supplementation. All but a few were being treated on the wards of the Massachusetts General Hospital, and these few were patients in other local hospitals. The group as a whole, therefore, constitutes a reasonable cross section of severely ill patients in a large general hospital. Almost every common type of disease that might be associated with acute or chronic starvation is represented, but the majority were suffering from gastrointestinal tract neoplastic disease or intra-abdominal infection.

Emulsions containing 10 to 15% of coconut, olive, peanut, and cottonseed oils, and synthetic triolein have been used.

Data pertaining to such reactions as pyrogenicity, blood pressure, pulse, and chills are presented. The collected data are analyzed in regard to the over-all effect of type of oil, concentration of oil, concentration of emulsifiers, presence of synthetic emulsifiers, quantitative and qualitative serum protein abnormalities of patients, and the effects of an antihistaminic on these reactions.

Ninety-one percent of the cottonseed oil infusions, 86% of the coconut oil infusions, 82% of the olive oil infusions, 85% of the coconut oil-olive oil infusions, 83% of the peanut oil infusions, 76% of the synthetic triolein infusions were without pyrogen reaction. If temperature rises of 2.0° F are excluded, the percentage of successful infusions rises appreciably to 97% for emulsions of cottonseed oil and 94% for emulsions of synthetic triolein. A small number of other unfavorable reactions occasionally observed are discussed in detail, especially as they pertain to the intrinsic colloid character of fat emulsions.

Substantial progress has been made toward the solution of the problems associated with the availability and use of emulsions of fat that can be given satisfactorily by vein. (Waddell, W. R., et al., Clinical Experience with Intravenous Infusion of Emulsified Fat: J. Lab. & Clin. Med., 45: 697-709, May 1955)

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Combined Steroids to Suppress Lactation

With an increasing number of patients who cannot or will not nurse their babies, the physician finds himself more and more in need of a simple

method of suppressing lactation and preventing the discomfort of breast engorgement during the puerperium. Prior to the advent of hormonal therapy, the only widely used treatment was breast binders with supportive analgesics. Both doctors and patients have objected to this method. Parker points out that a tight breast binder can seriously limit respiratory excursions and, if improperly applied, increase the likelihood of mammary abscess. Patients complain of the mastalgia of the breast engorgement, the discomfort and inconvenience of the breast binders, and the frequent failure of the binding to prevent lactation.

On the assumption that a combined estrogen-androgen might offer the benefits of both and the side effects of neither, Premarin with methyltestosterone was employed in 267 cases to inhibit lactation in the puerperium. In the belief that this method offers a workable solution, this report is added to the literature.

The 267 cases in this series from the author's general practice were patients in whom post-partum lactation was not desired. In only 6 of the cases was suppression advised because of inadequate breast tissue, inverted nipples, severe post-partum bleeding, or severe pre-eclampsia. The remaining 261, for various reasons, requested to bottle feed their babies.

The dosage regimen was three tablets every 4 hours for five doses. The first dose of Premarin with methyltestosterone was administered immediately on the patient's return to her bed from the recovery room, usually about 45 minutes after delivery. Reich states that, in estrogen therapy, the success of therapy varies inversely with the length of time between parturition and initiation of treatment. As this observation had been found to hold true in the author's experience with estrogen, the combined steroids were administered as soon as possible after delivery. In only two cases was the dosage delayed. In one, a case of post-partum bleeding immediately after delivery, the drug was withheld for 12 hours. In the second case, because of a nursing error, the patient did not receive her first dose for 8 hours. Both patients developed engorgement of the breasts.

In no case was it necessary to prescribe additional amounts of the drug.

Besides a brassiere to support the pendulous breasts, supplemental therapy was unnecessary. The brassiere was used only during the 5 days of hospital stay. On discharge, the patient was told that its further use was unnecessary. Saline purges, restriction of fluids, local applications to the breast, and analgesics were not required.

The efficacy of this method of therapy was evaluated on these criteria: (1) prevention of the discomfort and mastalgia of breast engorgement, (2) permanent inhibition of lactation; and (3) absence of untoward symptoms referable to the drug therapy.

One hundred and sixty-six patients (62.4%) who had no breast engorgement or untoward symptoms from the medication were considered to have had excellent results. Those who noticed a full but not painful sensation in the breasts were classified as having mild breast engorgement and were considered to have had good results. Ninety-one patients (33.8%) fell into this category. Ten patients (3.8%) with a full sensation and a slight lactorrhea were classified as having moderate breast engorgement and considered to have only fair results. These symptoms occurred on the sixth or seventh day post-partum. A patient with painful breasts (severe engorgement), recurrence of lactation, or untoward side effects, would have been considered to have had poor results. No patient warranted this classification. There was no nausea or vomiting, virilization, breast abscess, or excessive vaginal lochia, or bleeding after withdrawal of the drug. Menses returned after the normal interval of about 6 weeks. Of notable importance was the absence of mental depression in the puerperium. This was believed to be due to the combined effects of estrogen and androgen.

In this series, the success of Premarin with methyltestosterone to suppress breast engorgement and lactation was most gratifying. Its use provided a simple scheme of therapy that was fully effective in 96.2% of the cases. (Fiskio, P. W., Combined Steriods to Suppress Lactation: GP, 11: 70-72, May 1955)

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Household Goods

Have you just received orders to sea duty or duty overseas? If so, you may request non-temporary storage of those household goods which you do not desire to take to your new duty station. Approval for requests for non-temporary storage depends, however, on whether space is available. Non-temporary storage may not be available at the designated shipping activity arranging for shipment of your household goods. Therefore, the goods may have to be packed, crated, and shipped to one of the designated non-temporary storage activities.

If commercial transportation is utilized in placing your household goods in non-temporary storage, no further shipment is authorized under identical orders except in instances when you are ordered to places where shipment of household goods and dependents' travel is prohibited. In these instances, re-shipment may be authorized from non-temporary storage to the duty station provided a certificate is obtained from the overseas area commander to the effect that shipment of household goods or dependents' travel will not be authorized within 20 weeks.

If re-shipment is contemplated, this certificate should be obtained prior to shipment to non-temporary storage since the certificate is the

official document which will be used to support re-shipment upon receipt of approval for shipment of household goods or dependents' travel.

Non-temporary storage may be requested in connection with retirement including temporary disability retirement or transfer to the fleet reserve or fleet Marine Corps reserve. You may avail yourself of this right only in those instances where non-temporary storage is available at point of origin. If commercial transportation is involved in placing household goods in non-temporary storage, no further shipment is authorized at Government expense.

Non-temporary storage is also authorized upon being detached from a permanent duty station and ordered to temporary duty. This right is limited, in most instances, to non-temporary storage at point of origin since temporary duty orders do not entitle you to shipment of the permanent weight allowance except under orders to temporary duty in connection with the building, fitting-out or conversion of a vessel or temporary duty pending assignment aboard or to a vessel

If multiple shipments to your duty station and non-temporary storage are desired, contact your shipping officer to determine your entitlement. If such shipments are approved by your shipping officer, carefully check the inventories covering both shipments to ensure that the goods required at the overseas duty station are not included on the inventories covering shipment to non-temporary storage. (BUSANDA, Monthly Newsletter, April 1955)

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T V Production -- "The Lifeline"

On 16 May 1955, Medic TV Productions telecast "The Lifeline," a film made aboard the Hospital Ship USS Haven. In a letter to the Surgeon General, the Production Manager expressed the deep appreciation of the company for the cooperation and fine assistance extended by the officers and crew during the filming of this production, and the hope that the picture would be an honor and credit to the U. S. Navy and would reflect the great spirit exemplified by the entire staff of the USS Haven.

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Active Duty Training Opportunities for Naval Reserve Personnel During Fiscal Year 1956

The Chief of Naval Personnel has promulgated information concerning active duty for training ashore for Naval Reserve officer and enlisted personnel during Fiscal Year 1956.

Special courses of instruction, designed to aid in keeping Reserve medical personnel not on active duty abreast of recent advancements in military and naval medicine, have been established as listed below.

Eligible Reserve medical personnel, including those attached to pay units of the Naval Reserve, are encouraged to take advantage of the opportunity to attend one of these courses in a pay status. Quotas, providing for pay and authorized allowances for personnel in a non-drill pay status, have been assigned each naval district. Contingent upon non-availability of funds, active duty may be performed without pay. Detailed information concerning these courses may be obtained from District Commandants.

Seminar for Commanding Officers, Naval Reserve Medical Companies. (Six days) Will convene in the Bureau of Medicine and Surgery, Navy Department, Washington 25, D C. on 31 October 1955. All naval districts have been assigned a quota for this seminar.

Medical Military Training. (Twelve days) U.S. Naval Medical School, National Naval Medical Center, Bethesda, Md.; 3 October 1955 and 12 March 1956. Chief, Naval Air Reserve Training, Potomac River Naval Command and all naval districts, less 11th, 12th, and 13th, have been assigned quotas. Officer personnel only.

Insect and Rodent Prevention and Control. (Fourteen days) Preventive Medicine Unit No. 1, Naval Air Station, Jacksonville, Fla.; first Wednesday of each month. Chief, Naval Air Reserve Training, Potomac River Naval Command and all naval districts, less 11th, 12th, and 13th, have been assigned quotas. Male officer and enlisted personnel only.

On-the-Job Training in Submarine Medicine. (Fourteen days) Naval Medical Research Laboratory, Naval Submarine Base, New London, Conn. First Monday in August - November 1955 and February - May 1956. Districts 1, 3, 4, 5, 6, 8, and 9 have been assigned quotas. Medical and Medical Service Corps officers only.

On-the-Job Training in Medical Research. (Fourteen days) Naval Medical Research Laboratory, New London, Conn. Earliest possible date Fiscal year 1956. Districts 1 and 3 have been assigned quotas.

Aviation Medical Equipment Laboratory, Naval Air Material Center, Philadelphia, Penn. Earliest possible date Fiscal Year 1956. Districts 4 and 5 have been assigned quotas.

Aviation Medical Acceleration Laboratory, Naval Air Development Center, Johnsville, Penn., 4 - 18 July and 1 - 15 - 29 August 1955. Districts 1, 3, 4, 5, and 9 have been assigned quotas.

Naval School of Aviation Medicine, Naval Air Station, Pensacola, Fla. Earliest possible date Fiscal Year 1956. Districts 6 and 8 have been assigned quotas.

Diving Unit, Naval Gun Factory, Washington, D. C. Earliest possible date Fiscal Year 1956. Potomac River Naval Command only has been assigned a quota.

Naval Medical Research Unit No. 1, University of California, Berkeley, Calif. Earliest possible date Fiscal Year 1956. Districts 12 and 13 have been assigned quotas.

Eligible are Ensigns, 1995 (Medical) who have successfully completed first year of medical school and who manifest an interest in medical research and development.

Clinical Clerkship Training. (Sixty days) At U.S. Naval Teaching Hospitals designated by the Chief, Bureau of Medicine and Surgery. Earliest possible date Fiscal Year 1956. Potomac River Naval Command and all naval districts have been assigned quotas. Eligible are Ensigns, 1995 who have completed at least their second year in medical school. Each officer is eligible for only one tour of this training.

Special Weapons, Isotopes and Military Medicine. (Five days) Naval Station, Treasure Island, Calif., 27 February 1956. Quotas have been assigned districts 11, 12, and 13. Male and female officer personnel only.

Malariology and Insect Control. (Fourteen days) Naval Air Station, Alameda, Calif. First and third Wednesday of each month. Quotas have been assigned districts 11, 12, and 13. Male officer and enlisted personnel only.

Field Medicine. (Fourteen days) Camp Pendleton, Oceanside, Calif., 15 August and 10 October 1955. Quotas have been assigned districts 11, 12, and 13. Male officer and enlisted personnel only.

On-the-Job Training. (fourteen days) Any suitable training medical facility. Reporting date to be arranged between the Commandant, trainee, and Commanding Officer of the training facility. Quotas have been assigned all districts. Male and female officer personnel.

On-the-Job Training. (Fourteen days) Any suitable Naval medical facility as determined by the cognizant Commandant, preferably, a naval hospital. Quotas have been assigned Potomac River Naval Command and all naval districts. Eligible are Reserve enlisted personnel in training for a change to hospital corps rating (Group X). Personnel must have completed their initial recruit training in accordance with current instructions. (ResDiv, BuMed)

From the Note Book

1 The symposium of the Surgeon General of the Navy with high ranking medical and dental officers of the Navy and the Naval Reserve was held at the National Naval Medical Center, Bethesda, June 1 - 3, 1955. Rear Admiral B. E. Bradley, MC USN, Deputy and Assistant Chief of the Navy's Bureau of Medicine and Surgery, served as Chairman.

A principal feature of this symposium was a series of panels, or round table discussions, which provided opportunity for the conferees to discuss with each other and with representatives of the Bureau of Medicine and Surgery, their views, problems, and possible solutions. The medical panels were attended by fleet, force, type and staff medical officers; district medical officers; and commanding officers of naval hospitals. Conducted simultaneously with the medical panels was a series of dental panels and panels on research and Reserve activities. Attending the dental panels were fleet, force and staff dental officers; the inspectors of Naval dental activities, Pacific and Atlantic Coasts; district dental officers; the commanding officer of the Naval Dental School, Bethesda; and commanding officers of Naval dental clinics. Commanding officers and officers-in-charge of Naval research laboratories attended the research panels, and the Assistants to District Medical Officers (Medical Reserve Program) attended the Reserve panel discussions. (TIO, BuMed)

2 Rear Admiral W. P. Dana, MC USN, Assistant Chief for Aviation and Operational Medicine and Assistant Chief for Research and Medical Military Specialites, represented the Bureau of Medicine and Surgery during an Office of Naval Research-sponsored visit to LOBUND Institute, South Bend, Ind., May 24 - 25, 1955. The visit provided an opportunity to observe the present status of research with germ-free animals at the Institute; the problems involved in large-scale production, maintenance, and utilization of germ-free animals; and the other aspects of the long-range approach to germ-free animal research. (TIO, BuMed)

3 CDR H. S. Etter, MC USN, Director of the Special Weapons Defense Division, Bureau of Medicine and Surgery, participated in a panel discussion of "Atomic Bomb Injury, Prevention and Treatment" at a meeting of the Blair County (Pennsylvania) Medical Society and Civil Defense officials in Altoona, Penn., on May 24, 1955.

The coordinator for the discussion was Rear Admiral C. F. Behrens, 6th Naval District, Charleston, S. C. Captain D. W Miller, MC USN, Chief of Surgery at the Naval Hospital, Newport, R. I., was also a discussant. (TIO, BuMed)

4 The staff of Navy Medical Research Unit #3, Cairo, Egypt, participated in the Vth Middle East Medical Assembly, Beirut, Lebanon. Six papers were read by members of the staff. Exhibits dealing with the diagnosis of brucellosis, schistosomiasis, and urinary tract malignancy were also shown. (NAMRU 3)

5 The American College of Radiology has prepared a pamphlet giving a brief introduction to radiology. The information is presented in terms and explanation suitable for the information of the patient and others who may be interested and who are not familiar with professional terms. (DMO, 6th ND)

6 A new edition of a directory of services and facilities available to cancer patients throughout the United States has been issued by the Public Health Service. The directory, "Cancer Services and Facilities in the United States, 1954", compiled by the National Cancer Institute, can be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 45 cents a copy. (P. H. S., Dept., H. E. W.)

7 Special mechanisms by which the body destroys drugs and other "foreign" compounds, have been discovered, revealing that the body has systems of "counter agents" that attack and inactivate drugs. The counter agents are contained in little-studied liver microsomes, tiny particles of the body's cells too small to be seen even with a microscope. This discovery stems from research on the fate of drugs in the body being conducted by the Public Health Service's National Heart Institute, National Institutes of Health, Bethesda, Md. (P. H. S., Dept., H. E. W.)

8 A report of 141 cases of primary serofibrinous pleural effusion in young adult white men indicates the tuberculous nature of this form of pleurisy and emphasizes the importance of adequate, immediate treatment and long-continued observation to prevent relapse. (Am. Rev. Tuberc., May 1955; LtCol W. H. Roper, MC USA, J. J. Waring, M. D.)

9 The treatment of subacute bacterial endocarditis is discussed and the need for early intensive and prolonged treatment stressed. (Am. J. Med., April 1955; I. A. Feder, M. D.)

10 An analysis of the failures in a series of 400 consecutive patients undergoing resections for pulmonary tuberculosis is presented in J. Thoracic Surg., April 1955; R. J. Schlosser, M. D., F. I. Jarvis, M. D.

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Board Certifications - Inactive Duty Officers

American Board of Anesthesiology

LTJG Richard G. Ellis (MC) USNR
LT Alfred T. Wagner (MC) USNR

American Board of Dermatology and Syphilology

LT Edwin M. Hamlin (MC) USNR
LT Harry L. Wechsler (MC) USNR

American Board of Gastroenterology

CAPT John H. Willard (MC) USNR

American Board of Internal Medicine

LTJG Keehn "W" Berry, Jr. (MC) USNR
LT William G. Donald, Jr. (MC) USNR
LTJG Buford Hall, Jr. (MC) USNR
LTJG Fred "Z" Havens, Jr. (MC) USNR
LT Leo E. Hollister (MC) USNR
LT Harold P. Johnson, Jr. (MC) USNR
LCDR James W. Leatherman (MC) USNR
LTJG William M. Luikart (MC) USNR
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LT Richard H. Saunders, Jr. (MC) USNR
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LT John W. Findley, Jr. (MC) USNR

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LT Lawrence H. Arnstein (MC) USNR
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LTJG Charles D. Scheibert (MC) USNR

American Board of Ophthalmology

LTJG Paul St. Cyr Blak (MC) USNR
LT Robert F. Merchant (MC) USNR
LCDR Wixom S. Sibley (MC) USNR

(to be continued in the next issue of the Medical News Letter)

BUMED NOTICE 5212 13 May 1955

From: Chief, Bureau of Medicine and Surgery
To: All Naval Hospitals and Stations Having Infirmaries

Subj: Transfer of certain medical records to GSA Records Center

Ref: (a) ManMedDept, Art 23-303 (6) (d), item 617-

This Notice advises that the VA Records Center, Columbus, O., is disestablished; clinical records for VA patients hospitalized in Navy medical facilities should be held temporarily before forwarding to GSA Records Center.

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BUMED NOTICE 12000 16 May 1955

From: Chief, Bureau of Medicine and Surgery
To: National Naval Medical Center
Naval Hospitals (continental)

Subj: Industrial Relations Institute Schedule for Fiscal Year 1956, information concerning

Ref: (a) NCPI 230. 15-7

This Notice announces the Industrial Relations Institute Schedule for the fiscal year 1956. This Institute is further described in reference (a).

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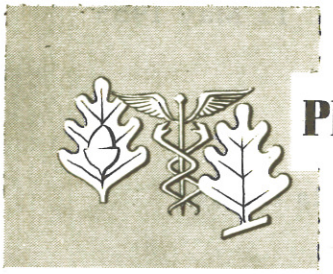
BUMED INSTRUCTION 7320. 3 25 May 1955

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical/Dental Personnel Regularly Assigned

Subj: Unit pricing of Medical Department property; accounting procedures

Ref: (a) NavComp Man, Vol 3, Ch 6
(b) ManMedDept, Art 25-3

This Instruction reaffirms a uniform accounting procedure for establishing and maintaining unit prices of property under the cognizance of BuMed.



PREVENTIVE MEDICINE SECTION

Communicable Disease Control

Notes on Salk Poliomyelitis Vaccine

Plans for the immunization of dependent children of Navy and Marine Corps personnel on active duty with Salk poliomyelitis vaccine have been announced in ALSTAOUT 1 of 19 April 1955, and ALSTACON 3 of 3 May 1955. Detailed instructions on the distribution and use of this vaccine are being prepared and will reach the field by the time commercially available vaccine is delivered to the Armed Forces for distribution.

It was expected that all dependent children in the first and second grades of schools in the continental United States, Hawaii, and Alaska would receive the vaccine in the program being conducted by the National Foundation for Infantile Paralysis. At the request of the Armed Forces, the Assistant Secretary of Defense (Health and Medical) asked the Foundation also to provide enough vaccine for dependent children in the same grades of schools in overseas areas other than Hawaii and Alaska. An affirmative reply has been received but the delivery date of the vaccine is still unknown. It will be distributed immediately upon receipt in amounts sufficient for the first two immunizing doses for the first and second grade school children indicated in requisitions submitted in accordance with ALSTAOUT 1.

Since early March, Armed Forces Medical Procurement personnel have maintained contact with the manufacturers of poliomyelitis vaccine in regard to plans for commercial distribution. Through radio and the press, most readers will be aware of the changing plans since efficacy of the vaccine was announced and it was licensed on 12 April 1955. At this writing, all commercially available vaccine will be subject to allocation by the Poliomyelitis Vaccine Advisory Committee of the Department of Health, Education, and Welfare. It is expected that initial allocation to the Armed Forces will be made on the basis of a ratio between the number of dependent children aged 5 through 9 and the total number of children in the United States of this age. (This is the same plan being used for each of the 48 states.) Subsequently, allocations will be made in accordance

with other age priorities recommended by the Advisory Committee until all children aged 1 through 19 years, for whom immunization is desired, have been supplied.

Because of the National Allocation Plan and the necessity for central procurement by the Armed Forces, it is not expected that any efforts which may have been made by field activities in attempting local procurement, by or on behalf of dependents, will prove successful. In the event dependents do obtain vaccine locally through any source other than the National Foundation for Infantile Paralysis, it will be deducted from the amount allocated to the Armed Forces and, in turn, from the supply of the local activity.

Only a very small quantity of vaccine was delivered to the Armed Forces on contracts negotiated prior to the allocation plan. This was sent to the Philippines. Information is not now available as to when regular deliveries of vaccine will begin under the allocation plan. From estimates of commercial production potentialities, however, it will probably be late fall or winter before supplies will be available to complete the immunization of children in first age-priority groups.

There seems little likelihood that production will permit immunization of any appreciable percentage of children in other age groups before the end of the poliomyelitis "season."

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Poliomyelitis

(This section concerning the clinical aspects of poliomyelitis is the continuation of a review prepared by Members of the Commission on Viral Infections of the Armed Forces Epidemiological Board as a revision of Army Technical Bulletin Medical No. 193, "Poliomyelitis." Certain editorial changes--principally deletions of details of medical and orthopedic care--have been made in adopting it for the publication in the U. S. Navy Medical News Letter.)

Clinical Features. Various clinical and subclinical forms of poliomyelitis infection are recognized as (1) inapparent infection, which is by far the commonest form and actually represents the absence of symptoms and signs during a period in which virus is present in and excreted from the body and in which antibodies develop; (2) the minor illness or abortive form, characterized by nonspecific symptoms; (3) the major illness which may be paralytic or nonparalytic and may appear either unheralded or as the second phase of the classical biphasic (dromedary) course of poliomyelitis; and (4) the so-called straggling type most often seen in adults.

The incubation period is variable and may be shorter than is usually supposed, averaging from 3 to 8 days for the abortive case, and 9 to 13

for the nonparalytic and paralytic cases; extreme ranges may be from 3 to 35 days. Difficulty in estimating the incubation period results partly from the fact that first phase symptoms may be slight or absent in the frank case, but when they do occur it is logical to consider them as marking the onset of the disease.

The minor illness (which may or may not be followed by the major illness) consists of a brief febrile episode without signs referable to the central nervous system, but in which sore throat, headache, anorexia, vomiting, abdominal pain, and other nonspecific symptoms may be present. In such cases, the diagnosis can be only a presumptive one based largely on epidemiological circumstances. Such cases have been estimated to account for from 4 to 8% of those patients who become infected with a given type of virus, but there is also reason to believe that in some epidemics they may range up to 25%.

The major illness is heralded by the symptoms and signs just mentioned as well as by those of central nervous system involvement, which include: stiff neck and back which may progress to weakness or paralysis of a muscle or various groups of muscles. It has been estimated that in the U. S. A. less than 2% of those persons infected with poliomyelitis virus acquire a major illness, and in this sense one can regard the development of paralysis in this disease as a complication.

The symptomatology in children and adults differs sufficiently to warrant the use of the terms adult and childhood types of clinical poliomyelitis. In the childhood type the onset of either the minor or major illness is apt to be sudden in approximately 80% of the cases with fever as high as 102° or 103°. The biphasic form of the disease is more common in childhood, the early symptoms consisting of sore throat, vomiting, and headache; the late symptoms consisting of headache, vomiting, stiff neck, and stiff back, which appear rather rapidly, sometimes tenderness in the limbs or abdomen, and, in rare instances, diarrhea. After one or more days of fever of the second phase, weakness or paralysis of various muscles may appear.

In the adult type the onset is apt to be more insidious than in the childhood type and the biphasic form is less common. The patient is restless and uneasy and complains of stiffness of the muscles which he thinks he can resolve by exercising. He may at the same time be afebrile. Other common symptoms are malaise, listlessness, mild intermittent headache, anorexia, vague pains or stiffness in the extremities, generalized tremulousness, and localized areas of hyperesthesia and paraesthesia. Often pain in the back may be quite severe. These symptoms may persist for several days, occasionally even for a week or more, before the onset of fever becomes appreciable (greater than 100. 5°). During this period it may be difficult to reach a decision as to whether or not the patient is really ill, although

the importance of early diagnosis is obvious, if only for the sake of avoiding excessively fatiguing or exhausting work or exercise.

In both childhood and adult types, a large variety of other signs and symptoms may be encountered early in the illness. These include transient personality changes, emotional lability, extreme irritability which may be followed by listlessness, lassitude, drowsiness, and even coma. Convulsions are rare but may occur. Dizziness which is not a true vertigo but a lightheadedness is not uncommon. Shaking chills are rare and are more apt to occur in the bulbar form of the disease.

Clinical varieties of encephalomyelitis are recognized to occur in this disease. All poliomyelitis cases have lesions of varying extent in the spinal cord, brainstem, cerebellar nuclei and motor area. The clinical forms are due to dominance of the lesions. These forms are spinal paralytic poliomyelitis; bulbar poliomyelitis; and encephalitis in poliomyelitis. In the spinal form, paralysis usually develops after 1 to 4 days of nonparalytic illness characterized by the aforementioned symptoms. On the other hand, paralysis may be the first manifestation of illness. Muscle pain may become more prominent with the onset of paralysis which is of a flaccid or lower motor-neuron type and is characteristically asymmetrical in distribution but may have any distribution. The muscles commonly paralyzed in order of frequency are those of the legs, arms, back, and thorax (including the intercostals and diaphragm). Paralysis of the muscles of respiration may occur.

In bulbar poliomyelitis, paralysis of one or more muscle groups innervated by the cranial nerves, especially those of the soft palate and pharynx, occurs, and this gives rise to dysphagia, dyspnea, and nasal speech. Paralysis of the muscles of the face, tongue, jaw, and eye may also occur. Its most serious manifestations are involvement of the circulatory or respiratory centers. These may develop with great rapidity and are of grave prognosis. Practically all acute deaths from poliomyelitis are attributable to bulbar involvement.

Encephalitis in Poliomyelitis. So-called encephalitic manifestations such as drowsiness, coma, and tremors are sometimes observed and may be common. Patients with coma show no pathological lesions that are not found in patients without coma. Biochemical disturbances in the blood, rather than special "encephalitic lesions", may be responsible for the clinical signs of so-called "polio-encephalitis."

Clinical Course. The usual febrile course of the major illness seldom exceeds 4 to 10 days, about 5 days of fever is an average. As fever falls the prognosis regarding further spread of paralysis improves.

Diagnosis. Poliomyelitis should perhaps be considered first when paralysis of one or more muscles develops (without accompanying sensory changes) in the course of an acute illness. Actually, paralytic poliomyelitis

does not, as a rule, offer great difficulties in diagnosis. The medical officer's problem here is, rather, to be on the alert to diagnose the onset of respiratory difficulties in order that he may act immediately. Nonparalytic poliomyelitis, on the other hand, is not easily diagnosed although during an epidemic of poliomyelitis the aseptic meningitis syndrome is usually caused by infection with poliomyelitis virus.

The juvenile patient at the onset of the minor illness or the abortive disease presents the nonspecific picture of a mildly ill child with listlessness, pallor, fever, and some redness of the pharynx. In the beginning of the major illness, whether paralytic or nonparalytic, the situation may be similar until stiffness of the neck, back, and hamstrings appear. Back stiffness is best elicited by asking the patient to "kiss his knees" while sitting up in bed with his knees naturally flexed. This is difficult or painful to attempt if the back is stiff. Tightness of the hamstrings, and stiffness, spasm, and tightness of other muscle groups may be present. In some patients muscle spasm persists undiminished long after the acute illness has subsided and, sometimes, in the absence of any muscle weakness.

Another early sign, which is helpful, is head drop in which the head falls back limply in a position of hyperextension if the patient is lifted from the bed with one's hands placed under his shoulders. This sign may also be present in pneumonia or meningitis but in the obvious absence of these it is useful in early poliomyelitis.

Reflexes are often normal and active in the early stages and in the nonparalytic case usually remain so. Before the onset of paralysis there is often a loss or diminution of superficial abdominal and spinal reflexes, but hyperactivity of deep reflexes with an occasional positive Babinski sign. The latter quickly diminish or disappear as paralysis appears. Often, reflex changes presage paralysis of a specific limb. Thus, the loss of the right lower abdominal reflex and a hyperactive or diminished right knee jerk may precede paralysis of the right leg by 12 to 24 hours. As weakness progresses, deep reflexes disappear and in widespread paralysis, both superficial and deep reflexes may be lost.

In spinal poliomyelitis, respiratory difficulties may arise as the result of weakness or paralysis of the intercostals, diaphragm and abdominal muscles. Muscle spasm and shortening of these muscles may also interfere with respiration in the absence of actual weakness. If the intercostals are weak and the diaphragm normal, there is little widening of the intercostal space and the rib cage is depressed at the insertion of the diaphragm. If the diaphragm is weak and the breathing is thoracic, widening of the intercostal spaces and flaring of the costal margin and the use of accessory respiratory muscles is noted. One or both sides of the thorax and/or diaphragm may be affected, causing difficulty in coughing, difficulty

in bringing up mucus secretions, and obstruction of the airway. As respiratory failure progresses, apprehension and cyanosis appear; respiration becomes more and more shallow, but a regular rhythm is maintained (unlike the situation in central respiratory failure in bulbar poliomyelitis). Other autonomic nervous system signs include localized areas of sweating and vascular abnormalities in the skin.

In bulbar poliomyelitis, the cranial nerve nuclei are the most frequently attacked, next the respiratory centers in the medulla, and least often the medullary vasomotor centers. The 10th cranial nerve nuclei are involved most often, resulting in paralysis of the pharynx, the soft palate, and the vocal cords. Nasal voice, hoarseness, increased accumulation of secretions in the oropharynx, difficulty in swallowing, and occasionally, regurgitation of fluid through the nose may develop. Paralysis of the facial nerve is also frequently observed. In patients in whom the medullary respiratory centers are involved, irregularity in rhythm and depth of respirations are the first signs to appear. Increased restlessness, anxiety, inability to sleep, rapid pulse rate, and a rise in blood pressure may occur before cyanosis is detectable. Respiratory failure may occur with alarming suddenness, and progress rapidly with increased periods of apnea, Cheyne-Stokes respiration, confusion, delirium, coma, and death. The temperature and pulse rise terminally, and the blood pressure may rise, or fall to shock levels. A few patients develop severe circulatory collapse due to vasomotor center involvement, with little or no cranial nerve weakness, and at first, no respiratory failure. This is a highly fatal form of the disease in which the patients have a characteristic appearance: the face has a dusky, flushed appearance, and the lips are cherry red. The pulse is rapid, 150 to 200 per minute, often irregular, and difficult to palpate. The blood pressure is variable, but in children it is more apt to be elevated; a small pulse pressure, sometimes as low as 10 mm of mercury is characteristic. Shock, pulmonary edema, and varying degrees of respiratory failure precede death.

Differential Diagnosis. Sporadic cases of nonparalytic poliomyelitis cannot be distinguished clinically from other forms of aseptic meningitis. Nevertheless, the presence of marked back stiffness, pain, and hyperesthesia in a patient with aseptic meningitis, especially in the summer or autumn, is more likely to be caused by poliomyelitis than by other viruses except where certain of the arthropod-borne viral encephalitides are endemic or epidemic. Both mumps meningoencephalitis and lymphocytic choriomeningitis are primarily winter or spring diseases and both can be diagnosed serologically if acute and convalescent phase sera are available. In the absence of parotitis, a history of exposure to mumps is helpful. In both, the spinal fluid cell count is apt to be higher than in poliomyelitis. Leptospiral meningitis can be diagnosed by serologic means. Infections with Coxsackie virus, both epidemic pleurodynia (Bornholm disease) and aseptic

meningitis have the same seasonal incidence as poliomyelitis and may produce a similar clinical picture. Infectious mononucleosis can be distinguished by the blood picture and a positive heterophile agglutination test.

Paralytic poliomyelitis and encephalitis in poliomyelitis must be differentiated from the arthropod-borne encephalitides which occur at the same season and sometimes in the same area. With the latter, encephalitic signs usually dominate the picture and may be the first to appear. Paralysis of the limbs is less common than in poliomyelitis, is more apt to be spastic than flaccid, and when it occurs, is almost invariably preceded by encephalitic signs. Serological tests are usually available to establish the diagnosis of the recognized arthropod-borne viral encephalitides.

Infectious polyneuritis (Guillain-Barré disease), tuberculous meningitis, coccidioidomycoidal meningitis, acute rheumatic fever, acute osteomyelitis, and acute appendicitis may also be confused with poliomyelitis. In the first-mentioned disease, it should be recalled that both sensory and motor changes appear in the affected areas and albumino-cytologic dissociation occurs early after onset. In epidemic times, it is also necessary to consider hysteria in the differential diagnosis.

Specific Laboratory Procedures. In those patients with physical signs of central nervous system involvement, the spinal fluid examination is usually positive, whereas in those poliomyelitis cases without central nervous system signs it is nearly always negative. However, in a small percentage of frank cases of paralytic poliomyelitis and even in fatal cases, the spinal fluid cell count is not elevated. A positive spinal fluid examination is the presence of an elevation of leukocytes in the spinal fluid, above 8 to 10 cells per cu. ml. The usual range in poliomyelitis is 50 to 300, although counts higher than 1000 sometimes, though rarely, occur. If the cell count is higher than 400, one should consider the possibility of some other type of meningo-encephalomyelitis infection. Characteristically, the cells in poliomyelitis are largely polymorphonuclears in the first 24 hours but there is a rapid shift to mononuclears (lymphoid cells) thereafter. At first the protein content may be normal or slightly elevated, 35 to 60 mg. per cu. ml., increasing during the second and third weeks at a time when the cell count has returned to normal. Thus, in late poliomyelitis, the spinal fluid findings resemble those in the Guillain-Barré syndrome.

The blood shows no characteristic abnormalities although moderate leukocytosis is not uncommon in the acute phase. If the total white count is higher than 15,000 per cu. ml. one should look for complications or possibly question the diagnosis of poliomyelitis.

Isolation of virus from throat and rectal swabs or stools, using tissue culture methods, can be carried out by special viral diagnostic laboratories.

The same is true of serological diagnosis by neutralization and complement fixation tests using acute and convalescent phase serum specimens. These are still largely research tools which should become more available in the future.

(ED: It is usually worthwhile to determine the virus type in any severe or unusual outbreak. The Bureau of Medicine and Surgery should be contacted for instructions.)

Treatment. There is no specific treatment, no antibiotic or chemotherapeutic agent which has any effect in controlling the spread of the virus within the body. Neither convalescent serum nor gamma globulin, when used therapeutically, alters the course of the disease. This is not surprising because usually the patient already has produced antibodies to his own strain of virus by the time of onset of the major illness. Medical treatment comes down to general supportive measures and the anticipation and handling of complications.

In the early stages of a mild illness, suspected to be poliomyelitis, it is unwise to subject the patient to unnecessary procedures which come under the heading of trauma or stress, for these may influence the course of the disease unfavorably. Under this category, are long ambulance rides, the shift to the new hospital environment, multiple injections, et cetera. For this reason it is advised that mildly ill patients be kept at home in bed, provided that they can have constant medical supervision and that, should paralysis (of any type) develop, they can be readily transported to a hospital.

Prognosis. During the acute illness the extent of paralysis cannot be predicted. As long as fever persists, there is a possibility that paralysis may develop or extend, but once the temperature has returned to normal, the development of paralysis is rare. The overall mortality varies in different epidemics but is usually around 4%. It is always much higher in the bulbar form of the disease, particularly in patients having respiratory complications. Age is also a conditioning factor, i. e., more severe paralysis, a higher incidence of respiratory muscle paralysis, or a higher incidence of the bulbar form increases the mortality in older age groups.

Recovery from paralysis occurs in some degree in most patients and is complete in many. Cranial nerve paralyses show the greatest tendency to recovery; if the patient with bulbar poliomyelitis does not die in the acute state, virtually complete return of those functions with bulbar innervation can be expected. The recovery of strength in individual peripheral muscles begins promptly after the acute phase. During the first 3 months, with adequate therapy, a muscle recovers approximately 60% of the total strength that it can ever recover. During the first 6 months, 80% of anticipated recovery occurs. Thereafter, muscular strength continues to increase at a slow rate until the culmination of a period of approximately 18 months following

the occurrence of the acute phase. The final score depends on the degree of irreversible nerve cell damage; therefore, some muscles may show no recovery or never improve beyond 10 or 12% of normal function, while others recover 100% of normal strength.

(to be concluded in an early issue of the Medical News Letter)

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Industrial Medicine

Differential Diagnosis of Diffuse Pulmonary Infiltrations

Although it is easy to establish the presence of diffuse pulmonary infiltrations by roentgenograms, to determine the underlying cause may be difficult. In addition to roentgenograms, the importance of a careful medical history and physical examination is stressed. Laboratory facilities should be available and full use should be made of them in arriving at a diagnosis.

Pulmonary Tuberculosis. The careful preparation of both family and patient histories is of the greatest importance in diagnosing this condition.

Miliary Tuberculosis. Three diagnostic procedures are followed: namely, liver biopsy, bone marrow biopsy, and ophthalmoscopic inspection of the retina.

Chemical Pneumonitis. This condition usually develops within a few hours following aspiration or ingestion of certain chemicals. Patients should be removed as quickly as possible from further exposure to aspiration of the irritant substances. Ingested irritant substances should also be removed from the gastrointestinal tract.

Periarteritis Nodosa. This condition is believed to be either a post-infection disease or due to a filterable virus. The disease may produce a moderate thickening and prominence of the hilar shadows and is usually accompanied by an eosinophilia. Diagnosis is very difficult unless a biopsy of a subcutaneous node is done.

Bronchopneumonia. In most cases, the inflammatory process occurs in patchy or confluent areas usually scattered throughout both lungs with maximum involvement usually occurring at the bases. The infection is

usually a mixed one but many cases are caused by pneumonococci. Early recognition of the causative agent is very important in order that proper therapy may be instituted.

Pneumoconiosis. The principal dusts which injure the lungs contain silica. Workers in cement and ceramic industries, miners of silica materials, sand blasters, and those engaged in manufacturing some abrasive soaps are most commonly affected because of their exposure to silica dusts. Naval industrial activities have a successful preventive program for pneumoconiosis, i. e., the use of coverings, hoods, and masks in hazardous dusty areas.

Pulmonary Carcinosis. Pulmonary carcinoma often presents a difficult diagnostic problem. One should not lose sight of the fact that the primary neoplasm may be in the stomach, rectum, thyroid, breast, or genito-urinary tract.

Fungus Infestation. This condition may be caused by any one of a number of fungi. The roentgenograms present no distinctive clinical picture. Diagnosis may be confirmed by demonstrating the fungus itself and by positive skin tests. Most fungus infections of the lungs respond quite favorably to iodides, sulfonamides, antibiotics, and vaccine therapy (moniliasis, blastomycosis, histoplasmosis, coccidioidomycosis, actinomycosis, and aspergillosis).

Sarcoidosis. This is a disease of unknown etiology. No specific therapy is known although several cases have been known to respond to streptomycin and cortisone therapy.

Hodgkin's Disease. This disease usually begins in the cervical lymph nodes and spreads to the entire reticular endothelial system. A steadily progressive anemia develops. There may be a Pel-Ebstein type of fever. Diagnosis is made by biopsy of a lymph node. The histopathology consists of Sternberg-Reed cells, numerous eosinophils and increased fibrotic stroma of the node. The clinical course usually terminates fatally in 3 to 5 years.

Löffler's Syndrome. The cause of this condition is not clearly defined. It is characterized by transitory pulmonary infiltrations, a benign course and eosinophilia. The eosinophils may reach 65%. It is difficult to differentiate from other pulmonary diseases. Treatment may be either blood transfusions or cortisone. Symptomatic treatment should be given for any existing allergic state. The prognosis is good.

Cystic Disease of the Lungs. The etiology of this disease is not clear. Some solitary cysts may reach an enormous size. The honeycomb or polycystic variety involves both lungs and is quite rare. Roentgenologic examination is the best method of diagnosis.

Pulmonary Granulomatosis. The clinical symptoms are those of respiratory distress. Cyanosis and clubbing of the fingers may be present. Roentgenograms characteristically show diffuse nodular shadows which gradually develop into a ground glass appearance. Cortisone therapy may be beneficial in some cases. The course is usually progressive and eventually, death results from right heart failure. (John B. Andosca, and Albert M. Moloney, Boston, Mass., Postgraduate Medicine, January 1955)

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General Sanitation

Epidemiological Study of Gastroenteritis in Egypt: Human Enteric Pathogens on Meat

The high incidence of gastroenteritis in the Middle East prompted an epidemiological investigation of shigellosis and salmonellosis in Egypt. The specific objective was to determine more precisely the role of fresh meats, as sold to the general public, in the transmission of diarrheal diseases.

Two hundred and fifty samples of meat were purchased from 53 open, unscreened butcher shops in the Cairo area during the period from October 1951 through January 1952. These shops, located in the poorer districts of the city, were representative of those serving a major portion of the population.

In general, there are two types of retail butcher shops in Cairo. A small number in the central metropolitan area are thoroughly modern in equipment and sanitation. These are usually part of exclusive grocery stores and serve a limited clientele. Shops serving the middle and poorer classes of people, on the other hand, are open and unscreened and usually border directly on sidewalks and streets. Carcasses are hung around the three walls and often across the front where they are exposed to contamination by customers, dust, and flies. It is estimated that only one-third of the shops have any means of refrigeration. This usually consists of an ice chest used only for storage of small cuts from carcasses on display. The close proximity of meat shops to garbage accumulations and to indiscriminately depostied human feces provides ideal conditions for flyborne contamination of the carcasses.

All the common cuts of beef, veal, lamb, and pork were included in the study. Pork, however, is an infrequently consumed item of food in this region and, consequently, is sold in few shops. Selections of the types and cuts of meat, with the exception of pork, were made as uniformly as possible from the various shops. Usually, 6 or 8 samples were bought from several shops in a single day. Meat markets were graded arbitrarily as to sanitation standards and refrigeration facilities. The meat samples were wrapped individually in paper, brought to the laboratory within an hour of purchase, and examined bacteriologically.

Enteric pathogens were isolated from 21 (8.4%) of the 250 samples. Two of the samples yielded 2 pathogens each, bringing the total number of isolations to 23.

Of the 23 isolations, 14 (60.8%) were identified as belonging to the Shigella group. Of these, 8 were Flexner strains, 4 were S. sonnei, and 2 were S. dysenteriae 2. The remaining 9 isolations (39.2%) belonged to the Salmonella group. Of these, 2 were S. typhi; 1, S. paratyphi A; 1, S. paratyphi B; 4, S. dublin; and 1, S. muenchen.

Other non-lactose-fermenting organisms isolated from the meat samples were identified so far as feasible. All 250 of the samples yielded Escherichia coli. Random samples of E. coli strains were tested for their "INVIC" reactions for an indication of their probable source. Forty percent were found to be of Type I. Among the species of Proteus isolated, P. morganii was most common. The others, in order of frequency, were P. mirabilis, P. vulgaris, and P. rettgeri. Paracolon organisms were present in 31.6% of the samples. Three strains of Bethesda paracolons were identified from among these.

One hundred and seventy of the samples came from shops with no refrigeration, and 80 from shops with refrigeration. The percentage of samples found to be positive for known pathogens was approximately the same in both groups.

It is believed that this is the first report of enteric organisms of human origin being found on fresh meat. Surveys similar to this one, conducted in other countries, have revealed as many as 13 different Salmonella species but these were probably of animal origin.

Human infection could occur through mechanical transfer of human enteric pathogens present in raw (retail) meat either to the mouth or to other foodstuffs. Infection could occur also through consumption of meat in which the organisms have survived inadequate cooking. That cooking does not always provide complete protection has been shown in several outbreaks of food poisoning in which the causative organisms were recovered from both cooked and uncooked portions of meat. It has been pointed out that the penetration of heat into meat is slow and that the interior often may not reach sterilization temperature. This fact is of particular importance

in countries such as Egypt where some of the meat dishes are not cooked thoroughly and outbreaks of food poisoning, attributed to meat, are not uncommon. (Thomas M. Floyd, Joseph R. Baranski, and Mohamed El-Gannani, U. S. Naval Medical Research Unit No. 3, Cairo, Egypt, 1952)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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